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STORAGE





VALUE AND ITS MEASUREMENT.

David T. Green.

On the nature

and methods of the measurement
of concrete structures, and the
application of these methods to
the problem of determining the
dimensions of concrete structures

of various kinds

Section of the Bureau of

VALUE AND ITS MEASUREMENT.

Dr. Friedrich von Wieser says that "in economy value (1)

decides everything." It is the controlling force in industrial life, determining in what direction labor and capital shall be expended, and in what proportion the products of industry shall be divided. The theory of value therefore must be the foundation of economic science, and as the main volume of economic study passes over from the methods of logic to the methods of natural history - the investigation of actual phenomena - some change in the conception of value is to be expected.

(2)

Professor Patten describes the progress of economic thought from the exclusive consideration of physical environment on the part of the Physiocrats, through the various stages of transition to the present theory (which is best exemplified in Professor Patten himself) to make the

differences in the ends and actions of men the corner stone

(1) Economic Journal for March, 1891.

"Wie man über die Werte urtheilt, muss man auch, wenn man folgerichtig lebt, letztlich über die Wirtschaft urtheilen." Der Nationalen Werte, p. VI.

(2) Theory of Dynamic Economics.

of economic theory. This increased consideration of the human element is causing a change in the idea assigned to the word *value*.⁽¹⁾

The old method of regarding wealth as the result of physical environment, and of measuring it in terms of commodities, led to an abstract science, and economic terms were robbed of that personal color and life which they have in popular usage. The economist taught that a man's wealth was the number of commodities that he could claim to the exclusion of his neighbor, and that value was only the ratio of exchange.⁽²⁾ Nearly a century has passed since Malthus made a plea for a return to the popular use of economic terms, but so slow has been the progress in that direction that Professor J. P. Clark and others are still finding that a careful analysis of popular usage yields new and useful definitions.

The disparity in the use of terms is a great hindrance to the development and dissemination of a true economic philosophy. The following definitions are given for the use of the student and the general reader.

(1) Definitions in Political Economy.
(2) *The Philosophy of Wealth*, chapter V.
"The Wealth Concept." Dr. C. A. Tuttle. *The Annals* for April, 1891.

ic theory; and, if I mistake not, the disparity originates to some extent in the fact that the political economist has been in the habit of looking upon economic life from the standpoint of commodities, while ordinary people view the ^{the} ~~same~~ phenomena from their own standpoint - that of man, the embodiment of wants seeking to be satisfied.

In regard to no other term is this difference more apparent than in the use of the ~~and~~ value. Value is still commonly defined as "The ratio of exchange between commodities", or "purchasing power." If a bushel of wheat exchanges ~~is said to~~ for a hat, each expresses the value of the other, and to tell whether any object has risen in value we must simply ascertain whether it exchanges for more ~~less~~ of other things than it did before. On the other hand, in popular language value is more directly connected with human feeling. Anything is valuable which satisfies want and cannot be replaced without effort or sacrifice. The more urgent the want whose satisfaction is dependent upon a particular object the greater is the value of the object.

Imagine two hunters meeting ⁱⁿ a wilderness. One is famishing with hunger and has nothing but brandy in his canteen. The other has just been bitten by a rattlesnake and

has only sandwiches and coffee, for refreshment. They will very likely exchange wares on the same ratio as if neither were in special need. Considering these commodities by themselves without reference to other goods, the older economic theory would say that their value is not changed so long as they exchange on the same ratio; but every one feels that the special need of the ^A ~~m~~ gives special value to the commodities.

Again, the economist, taking commodities for his standpoint, would say that a dollar is worth as much to one man as to another so long as it purchases the same amount of goods; but other people have an instinctive sense that a dollar is more valuable to a poor man than to a millionaire. When an ordinary laborer had to work hard all day for a sixpence a person innocent of economic study would not say that money was cheap though it required the whole sixpence to buy a pound of fine flour.

Value in popular language is measured in human wants, sacrifices, and efforts, while value in the political economies is measured in commodities.

To such an extent did the idea of commodities dominate the minds of Ricardo's disciples that they looked upon

the cost of raising and supporting men as the natural price of labor, and considered the commodities produced beyond ~~their~~ price as so much profit; and even Marshall is criticised by Wagner on the ground "that the laborer is regarded ^{as a means for production} (1) as a means for the laborer".

The socialist and the protectionist have pointed out this weakness in the older economics; and, largely under German leadership, the human element has been brought forward until, in the language of Professor Ely, "man is made the beginning and the end of all inquiries and nature is regarded as his servant."²

But while economists have come to recognise human activity as the subject and human welfare as the object of their inquiries, ~~still~~ the prevailing system of economic theory is ^{still} encumbered with the old conceptions. Until quite recently the more humanizing economists have devoted their efforts to historical and comparative investigations rather than to systematic theory. We are still told that a general rise or fall of values is impossible, and values of commodities are still reckoned in terms of other commodities.

It is noticed that this ratio of exchange between commodities is constantly changing. An ounce of gold will (1) Quarterly Journal of Economics, vol. 5, p. 332. (2) Political Economy. p. 109. "Ausgangspunkt, wie Zielpunkt ~~um~~ (over) unserer

exchange for more goods at one time than at another. So a multiple standard has been proposed as a basis for computing the ratio. But, at its best, the ratio conception of value can give us only a system of relations with nothing solid ~~on~~ upon which to stand. What student of economics has ever tried to work out a problem such as the ultimate effect of an eight hours ~~is~~ day, or of a tax on land, without feeling ~~that~~ that the whole economic system is in the air with no fixed point from which to judge of movements?

Professor Perry notices this difficulty but sees no
(1)
remedy for it. He says:-

"The notion of value is not conceivable except by a comparison of two things, and what is more, of two things mutually exchanged. Political Economy therefore is based on a relative idea, and has to do from beginning to end with a relation. Now in this there is an inherent difficulty and a difficulty too which can never be obviated. It lies in the very nature of the subject. Men much more readily apprehend an absolute idea than a relative one. They more

Wissenschaft ist der Mensch." - Roscher. Quoted in Smart's Introduction to the Theory of Value.

(1) Elements of Political Economy, p. 54.

easily follow a discussion touching the independent attributes of single objects**** than a discussion touching value, which is not an attribute of any one thing, but a relation subsisting between two things." Grant that value is merely the ratio of exchange and we have ^{for} the foundation of economic theory only unstable commodities for each of which our esteem is constantly changing; fluctuating with every change of environment, and with every step of progress.

But why not abandon this colorless concept of value? In common language value denotes not a mere relation but a real attribute of things. To the ordinary man an object which satisfies his want and saves him trouble is valuable in the same way that anything which effects the retina of his eye in a certain way is red, or just as anything which is strongly attracted by gravity is heavy. Value, redness, heaviness are real attributes of things. It is only when we consider how valuable, how red, or how heavy that we are obliged to bring in other objects for comparison. As we have already noticed, the popular concept of value appeals directly to human wants and sacrifice. The recent (1) development of economic theory is in that direction.-----

(1) "Mais c'est la subjectivité qui domine et - en tous cas - qui est le point de départ" "C'est par le comparaison des besoins et des moyens de les satisfaire, que la notion de la

Having already come to recognize human welfare as the centre of all practical investigations, we ought to welcome the present tendency to make it the center of theory as well. There can be no doubt but that a true analysis of economic laws founded upon the idea of value as a real attribute instead of a relation of commodities would make our science more acceptable to ordinary people.

Such a system must be more substantial than the present one because more true to nature, and more easily taught because more in harmony with popular conceptions.

Adam Smith in making labor the ultimate standard seems to found the conception of value directly upon human sacrifices, and, notwithstanding the strenuous efforts of ----- "valeur s'establit dans notre esprit." Maurice Block. *Les Progrès de la Science Economique.* pp. 114, 115.

(1) "Equal quantities of labor, at all times and places, may be said to be of equal value to the laborer. In his ordinary state of health, strength, and spirits; in the ordinary degree of his skill and dexterity, he must always, lay down the same portion of his ease, his liberty, and his happiness. The price which he pays must always be the same, whatever may be the quantity of goods which he receives in return for it. Of these indeed he may sometimes purchase a greater and sometimes a smaller quantity; but it is their ~~their~~ value which ~~prices~~ varies, not that of the labor which purchases them".

The Wealth of Nations, Book I., chapter V.

his successors, this idea of value has never been entirely eliminated from economic writings.

But the recent tendency to directly connect this idea of value with human welfare has been upon the side of utility rather than of labor sacrifice.)

The Ricardian economists have always recognized utility as a requisite, though not a determinant of value, but Je^{nnings}, while still maintaining the ratio concept of value, prepared the way for its downfall by showing that "final" degree of utility determines value."

It was natural that the new treatment of value should have originated in Germany where political economy was studied from the standpoint of social progress rather than that of wealth for its own sake, and Wieser accredits

the first exposition of use-value to the German economists.

(1) "But I am inclined to believe that a ratio is not the meaning that most persons attach to the word value. There is a certain sense of esteem or desirableness, which we may have with regard to a thing apart from any distinct consciousness of the ratio in which it would exchange for other things. I may suggest that this distinct feeling of value is probably identical with the final degree of utility." -

Jennings, The Theory of Political Economy, p 162, third edition.

(2) The Use-value, *Gebrauchswert*, of the Austrian economists (See *Natürliche Wirth*, p. 26, note) must be distinguished from the value-in-use of Adam Smith and the English School. The latter is simply utility while the former is limited by marginal utility. Other German writers, however, use the word *Gebrauchswert* in the sense of value-in-use or utility; e.g., Cohn - *Nationalökonomie*. vol. 1. p. 201.

(1)

But it is in Austria that the subjective nature of value has been most fully recognized and its laws most fully developed on the side of utility; while, in America, Professor Clark has shown the relation between value, marginal utility, and marginal labor sacrifice; and Professor Patten has developed the intimate relation between subjective values and social progress.²

But let us consider what this word value has come to mean. —

(1) Menger - Grundsätze ~~der~~ Volkswirtschaftslehre,
Wieser - Der Natürliche Werth. ^{Böhm-Bawerk}, Positive Theory of Capital. For an excellent statement of the Austrian theory, see "An Introduction to the Theory of Value" - William Smart. J. B. Say presented a theory of value founded on utility early in the present century; "C'est l'utilité des choses *** qui est le premier fondement de la valeur qu'elles ont; mais il ne s'ensuit pas que leur valeur s'élève au niveau de leur utilité; elle ne s'élève qu'au niveau de l'utilité qui leur a été communiquée par l'homme." Cours D'économie Politique, third edition, p. 80.
(2) Especially in an article entitled "The Ultimate Standard of Value" which appeared in The Yale Review for October 1892.
(3) Especially in "The Theory of Dynamic Economics" published by the University of Pennsylvania, 1892; and "Die Bedeutung der Lehre vom Grenznutzen", published in Conrad's Jahrbüch; ~~der~~ dritte folge, Bd. II., VI.

— In recent economic literature, as well as in popular language, anything is valuable which satisfies want and cannot be replaced without effort or sacrifice. Usefulness, or utility denotes a power to satisfy want~~s~~, but value has the additional element of sacrifice of substitution. It is the utility that would be lost with the loss of the particular object in question.

Would an article in possession, if removed, be replaced without sacrifice, like the air in a closed room? The measure of its value is nothing. Would it be replaced at some sacrifice? Its value is gauged by the sacrifice. Would an imperfect substitute take its place? Its value is gauged by the two-fold sacrifice entailed.

We may say that our dictionary would be worth a hundred dollars to us if no other could be obtained, but so ~~less~~
 (1) This is the meaning that the word value nearly always has, more or less clearly defined, when used in connection with economic affairs, but popular language recognizes no restrictions and it would not be difficult to find examples where the word value is used as synonymous with utility.
 (2) This illustration is taken from Professor Clark's Philosophy of Wealth, chap. 5, - with the word value substituted for effective utility. It seems useless to encumber our theory with the distinction between effective utility as a quality and value as a measure of the quality. Value, like weight, is a quality though usually considered quantitatively.

as an equally good dictionary can be obtained for ten dollars, ten dollars is the limit of its value. One's hand is of great value to him for it is very useful, and a satisfactory substitute cannot be obtained. If a confectioner has more ice cream than he can sell or use, any amount within the surplus has no value to him, for if annihilated it could be replaced from that which would otherwise spoil, but unless he chooses to reduce his price the value of ice cream to those who buy will remain as before.

(1)

In these days of interdependence, when every one has in some way hired out his services to his neighbors while supplying his own wants by purchases with the money he gets, it is evident that the value of most of our exchangeable commodities will correspond to the market price of such commodities, for that price represents the sacrifice which would be required to replace them. So important are market prices in determining values that we ^{may} can only use the word value to denote simply the amount of money which we would have to give for the object in view, or the amount of money for which it would sell.

(1) This example illustrates the principle of first utility, which is made the criterion of value by Jevons and the Austrian economists. It also shows how the effect of that principle upon market values is often thwarted by individual volition.

Notice that the same object may have very different values to different people.

The forces which influence merchants and other sellers in determining prices, and through prices, the value of things to individuals, must be considered under the theory of prices, but our present concern is rather with the unit of value.

As society is now organized, very few people supply their own food, clothing, shelter or recreation; all these necessities and enjoyments are obtained through the medium of money; and so, naturally enough, the monetary unit has become the prevailing standard of value. The monetary unit is an exceedingly convenient unit

for several reasons: (1) it is definite and familiar to all as the constant medium of exchange; (2) it is readily divided or multiplied to express any degree of value; and (3) it equates the personal element, and expresses values in terms adapted to the purpose of exchange.

To illustrate the last point let us picture to ourselves a rich man, a poor man and a pet dog. Perhaps the poor man would make a great sacrifice to keep the dog, while the rich man cares but little for it. That, however, is a personal valuation, and does not indicate which man will have the dog. But if the poor man considers it worth five dollars to him, while his more fortunate neighbor is ready to pay six dollars for it, the dog is pretty sure to fall to the rich man. The valuations in units of money ~~are~~^{are} the terms from which the ratios of exchange are determined. Under the present social order the commodity goes to the one who will pay most for it, but, owing to the inequality among men, this is not usually the one who wants it most.

The amount which I am willing to pay for a favorite picture depends not only upon the importance of the picture to me as a source of gratification, but also upon the import-

tance of a dollar to me.)

When we speak of the value of a house, or of a cow, we usually refer to the number of dollars that it is worth, but we have no conception of its real value to the owner ~~in~~ till we know his estimation of a dollar. The amount of pleasure or hardship that depends upon its possession. (1)

Values always originate and derive both their meaning and their amount from such considerations of human well-being, though the coloring is largely lost by expressing them in terms of dollars and cents. Back of all money values lie personal values, and money values cannot be explained till the nature and laws of personal values have been discovered.)

The money dollar is objective. It is but a commodity, while value is subjective and ~~concerns~~ ^{related to} human wants and satisfactions.)

The possession of a dollar may be a matter of life

(1) When we say that this article is worth two dollars and that article is worth five, we do not consider the fact that a dollar has a very different value to different people - nor do we deny the fact. Values expressed in terms of the monetary unit are called objective values because the unit is objective. The values themselves are subjective and must vary in the same ratio that the unit varies when referred to different people.

or death to one man while another man would hardly lift his finger for so paltry a sum.)

(Taxation in proportion to property or income is justified not on the ground of the benefits derived from government, but rather, of its approximation to equality of sacrifice.

But how may the varying value of the monetary unit to different individuals be revealed and measured? Two methods are contending for our acceptance, one looking to the utility of the dollar, the other to its cost.

Suppose a man to spend his income, dollar by dollar, purchasing goods in the order of their importance to him. The utility of the last dollar's worth would determine the value of money to him for that would be the satisfaction which the loss of any dollar would intercept.

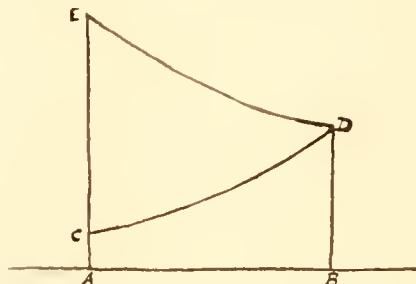
On the other hand most people earn money, or at least save it, by fatiguing, or otherwise disagreeable labor. If they value a dollar highly they will prolong their labor till it becomes decidedly burdensome, but if they place a low estimate upon the money earned they will stop when the sacrifice of continuing would be slight. One nat-

urally works till the pleasure to be derived from the possession of another cent is just offset by the displeasure of earning it, and of course one values every other cent in his possession at the same rate.)

— The sacrifice involved in the earlier hours of labor does not indicate the value of the earnings, for a dime lost can be replaced only by extending the labor day.)

— The earnings of the earlier hours will contain a surplus above the subjective cost of that portion of labor. ^{the} 1

— (1) Professor Clark, in the Yale Review for November 1892, illustrates these subjective utilities and costs by the following diagram:



"A B is the length of the day, while A C is the pain of the earliest labor, and B D that of the last. A E represents the gain [utility] secured by the first product, and E D that of the last. B D is in fact two coinciding lines, of which one measures the burden of the final labor, and the other, the gain of the final consumption. The area ^AABDC measures the total sacrifice involved in a day's labor; ABDE is the total gain and CDE is a surplus gain, representing the net benefit of a day of industry. All gains below the line CD are exactly offset by costs."



It is not easy to determine whether the importance of a dollar to its possessor is best revealed by referring to the additional pleasure that it will give or to the displeasure which its possession will save. So far as people regulate their actions with reason the two methods would ~~in~~ give equivalent results, for it is not reasonable to endure a hardship for money unless the money ^{will} yield a pleasure equal to the hardship, nor is it reasonable to shun a hardship until it has become equal to the additional pleasure to be derived from the money which it yields.

It may be claimed that the utility method is of more universal application than the cost method, for so far as labor sacrifice is concerned, many people have fixed incomes, fixed hours of labor, or fixed habits of life which interfere with the natural limitation of the period of labor and the resulting equivalence between the final labor sacrifice and the utility of the final earnings. The music teacher would be glad to give more lessons at the same rate per hour, and more calls would be acceptable to the physician. On the other hand nearly everyone, either in his regular occupation or outside of it, is often called upon to

decide whether the sacrifice involved in continuing work equals the utility of the money to be gained or saved; in other words, to decide whether it will pay to work any longer; and there is reason for the belief that sacrifice and hardships are more definite and capable of estimation than pleasures.

No attempt, I think, has ever been made to establish a unit of subjective pleasure, but on the side of hardships the labor unit has been proposed. We have found the sacrifice at the natural close of a labor period to be an index of the value that one places upon the earnings, but how can we compare this sacrifice in respect to different individuals? It is not an easy matter. But apart from any special consideration of the burdensomeness of the last moments of a labor period, a day's labor, or an hour's labor, may be taken as a unit of sacrifice, though it is necessarily inaccurate.

Let us return to the comparison of the rich with the poor man. Suppose them to be in equal physical condition and both caught in a storm at a distant station. If not moved by selfish considerations you will as readily lend your umbrella to one as to the other. It will be an equal service to either. If, however, you wish to make money on

your fortunate possession, the poor man may tell you that the use of the umbrella would not be worth twenty-five cents to him, though the rich man would be glad to use it even if you charged him two dollars for the favor. But if instead of money you should ask an hour's labor for the use of the umbrella the two men might be placed upon an equality again. Probably the most general available criterion o' the real value we place upon money, or any other commodity, is the amount of labor we are willing to give for a certain quantity of it. It seems just to the socialist that the state should demand equal hours of service from each member of society; with a correction, to be sure, for labor that is especially disagreeable.

Yet before accepting the hour of labor as the unit of personal sacrifice or valuation we should consider that some people, from personal characteristics, dislike labor more than others, and that labor involves an extra sacrifice to some on account of their desire to use their time in the pursuit of other objects.

But to the commercial world this personal unit of value is of less importance than the generalized unit which, like the dollar, will serve to measure the comparative values of different things to every one, though it necessarily

fails to indicate the relative values of the same thing to different people.

The importance and precision of the monetary unit arises from the fact that the system of one price to all is generally prevalent.

However much the value of a dollar to different individuals may vary, yet, in as much as it represents to everyone a definite amount of purchasing power, the dollar must remain the unit of chief importance in commerce.

Every one depends upon commerce for the satisfaction of a large number of his wants and hence must arrange his scale of personal valuations on the basis of the unit of purchasing power. He must form a mental estimation of the importance of a dollar to him and regulate his economic life in accordance with that estimation.

The relations which arise between the personal valuation of the unit of purchasing power and of commodities, determine the course of trade.

To each individual the dollar is a unit of value, but as between individuals of different economic standing it is a unit of purchasing power rather than of value.

The ideal of socialism would make the unit of personal value, of sacrifice, also the unit of purchasing power but such a dream is far from realization. Under the present social order each one is rewarded in proportion to his contribution to the general welfare, rather than upon the basis of the personal effort, or sacrifice involved, and the unit of purchasing power is objective rather than subjective.

We may be willing that personal value and purchasing power should be thus ~~directed~~ ^{directed}, but the monetary unit has a new significance when taken as the standard of deferred payments.

2 We have found the dollar to represent very different values to different individuals, but while this is true it might be possible for the value of a dollar to remain constant from decade to decade when referred to people of a given economic condition; or, without any direct reference to its personal importance, the dollar might remain from decade to decade constant in its general purchasing power.

In which case ~~until~~ ^{would} the dollar be a just standard of deferred payment—which would give the honest dollar?

The progress of industrial development is constantly

facilitating the production of commodities. Methods are being improved, new resources ~~discovered~~^{overed}, and organization is becoming more perfect.)

(If the decrease in the cost and increase in the quantity of goods causes a fall in their personal values ought the dollar also to fall in value and thus remain constant in purchasing power? Or if, on the contrary, the general social development, the increased variety of consumption, and the widening of the circle of wants, should increase the marginal cost, the marginal utility, and thus the personal valuation of commodities, ought the dollar also to rise in value and retain a constant power in exchange?)

(Or would it be more just in either case for the monetary unit to remain constant in value though its ratio to commodities might change? Should the man who has borrowed one hundred dollars for ten years be compelled to return, besides the interest, a sum equal to the original loan in purchasing power, or in value?

It may be claimed with reason that the verdict of justice would depend largely upon the contract made between the debtor and creditor. The natural rate of interest would

be raised or lowered if the contracting parties expected the principle itself to fall or rise in value. A depreciating money unit would be balanced by a higher rate of interest, and the conditions of the contract should be fulfilled. On the other hand it may be said that the future changes in the value of the monetary unit are so uncertain that they are very imperfectly, if at all, represented in the rate of interest upon long time loans.)

(The farmers who complain of an appreciating currency do not see that they are compensated by a low rate of interest upon their mortgages.

The question involves many difficulties. Professor (1)

E. A. Ross says all agree "that economic justice consists in the exchange of equal values", though he himself abandons that position if marginal utility be accepted as the criterion of value; and Mr. Merriam says that "the justice of the debtor's repaying to the creditor a value equal to the value received need not be defended as it is seldom seriously assailed". Mr. Merriam adheres consistently to the final utility, conception of value and regards that as the ideal

(1) The Annals, October 1892.

(2) The Annals, January, 1893.

money which remains constant in final utility to society, so that the monetary unit shall always represent the same amount of marginal utility or real importance for the well being of society.)

Mr. Merriam admits that such a constant unit is chimerical, yet as an ideal standard it is well to form a clear idea of its meaning.

What then is this final or marginal utility to society which seems to be the criterion of social value? If society, like an individual, ^{would} use its total income unit by unit in supplying first its most urgent wants and ^{then} ~~its less urgent wants~~ ^{those of first urgency} in order, it is evident that the last units of income would have a utility which would represent the importance or value of ~~each~~ ^{all the} units of the income. Then the idea of value based upon the final utility to society would have a definite subjective meaning, and the value of the unit could be compared from decade to decade.

But the problem is not so simple. Society does not satisfy the wants of ~~its~~ ^{her} members in the order of their urgency, but ^{is} ~~always~~ ^{partial to} always favors those members who can give most in return for her favors.)

We have noticed that, owing to differences in income

and in wants, the marginal utility of a dollar to one man is far ahead of that to another man. While this is so, marginal utility to society can hardly have any definite meaning.

When it is said that the real value of a dollar to society should remain constant we may well ask: To what part of society?

It is quite possible for its value to increase generally in respect to the debtor class though remaining constant, or decreasing to the creditor class.

In our efforts to regulate the value of the monetary unit should we consider the rich or the poor, the creditor, or the debtor; or should we take a general average of all? If a general average is chosen upon what principle should the average be made?

It is now generally admitted that value is subjective in its nature and that it must be referred to subjective effects rather than to commodities for its ultimate measurement, but, having renounced commodities as only an artificial standard, we come inevitably upon this difficulty: Any unit of purchasing power must vary in its subjective value according to the economic condition of the person to whom it is referred.

So far as I know the only attempt to arrive at a subjective unit of value by a combination of all the individual standards is that of Professor Clark, (1) who considers "the pain suffered by society as a whole in the final periods of daily labor" as the ultimate unit of value.

It has now been over twenty years since *Jevons* and Menger set forth the relation of value to final utility, and writers upon economic theory have long been busy in formulating the laws of subjective value; but Professor Clark has now taken the lead in deducing ~~in a scientific manner~~ a subjective unit of exchange value.

~~It would be timely,~~ therefore, to give a somewhat detailed criticism of Professor Clark's conception.

In order to understand this conception of the unit of value we must remember that Professor Clark includes under the pain of the final period of labor not only the positive discomfort of the final labor of the day, but also the other sacrifices, such as foregoing the pleasures which continuing work prevents. Thus the pain of the final labor

(1) The *Ultimate Standard of Value.*

The *Yale Review*, Nov. 1892.

is supposed to equal the additional pleasure to be derived from the final earnings, and final disutility becomes equal to final utility at the point of time when one chooses to stop work.

The difficulty of establishing this equality between final utility and disutility has already been considered, (1) and it is treated at length by Professor Patten, who prefers to confine the meaning of the terms cost and utility to their positive elements, which would leave a surplus of utility above the cost even of the final labor of the day.

But granting this equality, let us consider how this unit of "the pain suffered by society as a whole in the final periods of daily labor" is composed.

Unfortunately Professor Clark is not very clear upon this point. He expresses the unit as the sum obtained by adding together the personal disutility experienced by each member of society at the point of time when he chooses to stop work, but when one attempts to give a definite meaning to the conception a question arises in regard to the character of these final increments of disutility. Shall they be for equal infinitesimals of time, or for equal infinites-

(1) "Cost and Utility," *The Annals*, January, 1893.

imals of earnings? In other words shall we add together the disutility which each one experiences from, say the last minute of the day's labor, or should we rather take the disutility involved in earning, say the last cent of the day's wages?

The former method would give a unit which would obviously be of little use as a standard of value. In the first place, we have no assurance that the sum of disutility would remain constant, for the development of the arts of production tends to lower the marginal disutility of labor, while the increased variety of consumption and the development of new wants tends to keep people at work till the marginal disutility is high. These two tendencies may or may not exactly offset each other. If they do not, the standard of value is not constant.)

In the second place there is practically no means of comparing such a unit of value with the ~~monetary~~ unit, so long as the final minute of labor represents very different earnings for different persons.

Professor Clark says. "The price of things corresponds to the pain of acquisition, of which the unit is the

sacrifice entailed on society by the work of the final minute in each of a series of days." The context shows that he does not refer to the pain endured in producing the different things, but to the pain to which society will submit in order to purchase the things. In other words he evidently means that society prizes a commodity which sells for two dollars twice as highly as one which sells for one dollar, and will put forth a proportional effort for its acquisition. If that is all he means, one can hardly question his proposition: but what light does this throw upon the standard of value? So long as one man can earn a dollar in the final minute of the day's labor while for another man the final minutes of three hundred days are required, how can we determine the relation between a dollar and this final minute disutility to society in general?

If we could add together the earnings of every member of society for the final minute of the day's work and divide by the number of members, an average would be reached which might be taken as an index of the relation between the monetary unit and the final increment of labor. Then if we could find the average disutility of the final minute of labor and compare this average disutility of final labor with the average earnings of the final labor we could ascer-

(1)

tain an average value of the monetary unit. But how can this average disutility of the final minute of labor be estimated or measured?

This brings us in position to see the weakness of Professor Clark's unit, if we propose to use it practically
(2)
as a standard of value. We still have no unit of disutil-

(1) We must remember, however, that an average value is necessarily a fictitious value.

Should this average value of a dollar remain constant it might still be an unjust standard of deferred payments because in forming the average according to the above method a wealthy man has more weight than a poor man.

Should a hundred railway presidents double the money earnings of their final labor the average value of a dollar as obtained above, would decrease much more than when a hundred switchmen doubled their final earnings. The greater weight of large incomes in determining the average earnings of the final minute of labor is not fully compensated by the greater weight of the poorly paid labor in determining the average disutility of the final labor.

(2) It should be said that Prof. Clark does not indicate that his unit of value was designed for such use.

ity in terms of which we can say that this man's final minute of labor costs him three units while this other man suffers four units. Without some means of measuring and comparing these subjective disutilities of final labor it is impossible to determine the average disutility, which, in turn, is a requisite for determining the average subjective value of a dollar.

The sacrifice involved in the last minute of a period of labor may serve as a unit of value to the individual who chooses to stop work at that time, but it is not a unit which any one can use except the individual himself. He may make use of it, consciously or unconsciously, in the regulation of his own economic life, but no unit has been devised in terms of which the amount of this final disutility may be stated accurately, and combined with the corresponding sacrifices of other members of society. We can compare and measure our own pleasure and pains, and, in fact, do so whenever we decide upon what purchases to make with our income, but it is not so easy to say whether A suffers two, three, or ten times as much as B from the last minute of the day's work.

— It is impossible to add these disutilities, as Professor Clark proposes, or to average them.

Thus far our study of final labor sacrifice has given us no social unit of value in terms of which the real importance of anything to different individuals can be expressed. Much less has a unit been found which can serve as a constant standard of value to society from decade to decade.

labor for equal increments of time
But instead of taking the final increments of time, let us see if a better result can be reached by considering the disutility involved in securing the last increment of the day's earnings.

Our unit of personal disutility will be that of earning the last cent rather than that of ~~earning~~ ^{writing} the last minute.

If we could add these final disutilities as experienced by each member of society respectively, and divide by the number of members, we should at once arrive at the average value of a cent to society.

But here again we meet with the difficulty of expressing the subjective feelings of different people in terms

of a common subjective unit. We have no means of finding these disutilities because other people have no means of accurately telling us the amount of disutility which they experience. It may be that physiological psychology will sometime supply a method by which the feelings of different people may be measured and compared with accuracy, but at present, the task is beyond the power of the economist.

It may be said, however, that this practical difficulty of measurement need not interfere with a purely theoretical study. We should first determine what the true unit of value would be and then meet the obstacles to its attainment as best we can. Let us consider then whether this second method of averaging final labor sacrifice would give us a true standard of value if the indicated computations could be made.

Let us grant that the disutility experienced at the time one chooses to stop work is a true index of his valuation of the earnings, and is equal to the final utility of the earnings. Then add together the disutilities experienced by all the members of a society in obtaining the last

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Net society represented by ten men of whom two have incomes of \$15.00 a day, 3 have incomes of \$5.00 and 5 have incomes of \$2.00 a day.

Eliminating personal differences we may assume that each man's estimate of money will be represented by the reciprocal of his income and

$$\frac{1}{10} + \frac{1}{10} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$$

divided by 10 or $\frac{33}{100}$ represents the average valuation of a cent. These fractions may represent the time required by the respective individuals to gain a cent or if you please they may represent the number of grains which a cent would affect. Now it is evident that a change of a second of labor time or of one grain in the estimation of the cent on the part of one of these individuals will have the same effect upon the average valuation that any equal change in the part of any other of the individuals will make.

cent of their daily earnings. Multiply this sum by one hundred, and divide by the number of members in the society. The result will be the average value of one dollar to the people involved.)

↳ If similar calculations made in succeeding years and decades gave the same average disutility we could say that the average value of a dollar had not changed.)

↳ Would this then be the ultimate standard of social value? Would it also be the just standard of deferred payments?

To the former question an affirmative answer seems necessary, for in as much as the value of a dollar must vary with the individual we can only take an average to represent the value to society as a whole; and when the average is taken according to this method any change in the value of a dollar to one person will affect the result just as much as an equal change on the part of any other member of society, whether rich or poor. *

The question in regard to a just standard of deferred payments is not so easily answered.)

↳ When one rich man accommodates another with the loan

of a hundred dollars, the sum is of little account to either, but if, while the debt is unpaid, both men become poor the hundred dollars comes to embody a much greater value to both men, and, from the standpoint of personal value and sacrifice, the repayment of five or ten dollars might justly cancel the original obligation.

But if the creditor has grown richer while the debtor has ~~grown~~ poor, such an equalization would be impossible. Either one man would be obliged to repay more (in personal value) than he had received, or the other would have to accept much less than he had ~~given~~ ^{carted}. The dollar which has increased in value to one has decreased in value to the other.

In cases where the economic condition of the contracting parties has changed while a debt is standing there seems to be no way of attaining ideal justice; and expediency may justify the present custom of holding a debtor, except in cases of bankruptcy, to the payment of the same number of dollars which he had borrowed, irrespective of their importance to either party.

No attempt is made to adjust debts to the personal standard of the individual, but the attempt is often made to so regulate the currency that the dollar may embody a

constant amount of value to society in general.

Relying upon the older definitions of value as the ratio of exchange, or power in exchanged, many writers have taken the ground that constant value to society would mean constant purchasing power; but the rapid progress of industrial development is making so great changes in man's relation to commodities that the theorist is turning naturally to the deeper significance of value. It is found to be subjective in its nature, and evidently the ultimate standard of value must be a subjective standard.

The principle of final utility, as measured in terms of personal gratification or in terms of the disutility of final labor sacrifice, gives us the rule for measuring values upon the part of the individual, and the modern conception of society as the social organism has led to the application of the same principle to the determination of social values, and the expressions "final utility to society" and "final labor sacrifice of society" are brought into economic literature.

When all values are expressed in terms of the unit of exchange, this principle of final utility is, perhaps, the chief ~~force~~ ^{force} in the determination of prices and must

figure largely in the theory of prices.)

(But, as we have already seen, when we attempt to ascertain the real value of the monetary unit itself we find that the conception of a final utility to society will not bear inspection. The final utility of the dollar or the cent varies with each individual.)

(To represent its value to society as a whole we must be contented with an average.

Then the question arises whether this average value of a dollar should remain constant in order to make it the definite best possible standard of definite payment.

Contrary to the views commonly expressed, I would question whether, from the standpoint of social welfare, a unit of constant average value would be the ideal standard of deferred payment.

Suppose a few members of a community to grow very rich, so that the dollar represents much less value to them than formerly; in that case ought the coinage to be restricted or some other means be resorted to for increasing the value of a dollar to other people enough to keep the average constant? *We see at once that this would be an injustice to the other class,*
We do not think it unjust if the dollar represents

somewhat less toil and anxiety now than it did a few decades ago.

Of course fluctuations in the value of currency are pernicious, and a sudden detraction from its value would be robbery, but it may well be questioned whether the natural depreciation which comes from industrial progress is not more in keeping with justice and social welfare than a more strictly constant unit of value would be.)

President Walker has noticed that a gradually increasing currency is conducive to prosperity, and Professor Ross presents strong reasons for the claim that the debtor rather than the creditor class should reap the benefit of industrial progress. Of course the debtor whose economic standing has fallen would still suffer hardship in paying his debt, but that is the punishment which society imposes upon the unsuccessful, but the debtor whose economic standing has remained stationary would not be obliged to repay ~~back~~ more in personal value than he had received on account of the success of other members of society.

Doubtless the steady depreciation in the average value of a dollar would tend to keep interest somewhat above the natural rate, but the effect would certainly be slight

really appreciating, depreciating or constant in value is of far less importance than that its value should be free from fluctuations and uncertainties.

A steady movement whether upward or downward in the value of the money unit will be reflected in the credit contract but uncertainty in regard to the standard causes risk and results in losses to both debtors and creditors.

for the depreciation itself would not be perceptible except for a long period of time. Objections arise upon both sides,

If society ~~were~~ in a static condition the best standard of deferred payment would doubtless be a unit whose average subjective value remains ^{ed} constant, but in a progressive society a slightly depreciating standard seems just as fair, and we may at least conclude that the subject of a just standard of deferred payments would not be entirely settled by the determination of a perfectly constant unit of subjective value.

In as much as the average subjective value of a dollar cannot be exactly determined on account of the difficulty in measuring or comparing the feelings of different people, it becomes necessary to judge of value movements by such external signs as are available.

Adam Smith regarded the quantity of labor which is willingly given for anything as a true measure of its value. He speaks of labor as "the only universal as well as the only accurate measure of value, or the only standard by which we can compare the values of different commodities at

(1)

all times and at all places."

This statement has been much abused by economists who ~~had~~ did not understand it, and it cannot be understood by any one who looks upon value from the standpoint of commodities. There is no constant relation between labor and commodities, but the relation between labor and personal sacrifice is perhaps as constant as any of the quantitative relations which we find in our ever changing economic life.

(1) Sidgwick in his "Scope and Method of Economic Science" quotes this passage, though incorrectly, and asserts that "a tiro can now see the fallacy of Adam Smith's statement".

It is true that labor is hardly a practicable measure of the objective exchange value which Sidgwick has in mind, but even for exchange value the statement is not altogether fallacious if, as Adam Smith proposed, "the different degrees of hardship endured; and of ingenuity exercised be taken into account." For what better criterion of the exchange value of an object can we have than the services which the object will command?

It is true that Adam Smith does not keep to the subjective standpoint; in one place labor is regarded as a constant personal sacrifice, but again, it is looked upon as a commodity to be purchased with other commodities, yet his reason for making labor the ultimate standard is that "in his ordinary state of health, strength, and spirits; in the ordinary degree of his skill and dexterity", the laborer "must always lay down the same portion of his ease, his liberty, and his happiness."

Thus Adam Smith recognized the truth for which the most recent economic literature is contending - that the ultimate criterion by which the value of anything is to be judged is its relation to subjective wants, sacrifices and satisfactions.

In regarding labor as a perfect measure of value he was doubtless wrong, whether the subjective or the objective standpoint be taken.

Viewed from the subjective standpoint, quantity of labor could be so defined as to be equivalent to quantity of sacrifice, but as we have seen it is not the total sacrifice of labor but the marginal sacrifice which corresponds to the final utility and value of the earnings.

... Labor is far from being a perfect measure of value, yet in view of the impossibility of estimating and adding final utilities or the final labor sacrifice of different members of society, it may be the best means we have of comparing the real ~~nature~~^{value}, say of a dollar, to different people at the present time, or to people in general at different times, and in distant places. ▷

~~For a~~ ^{to the same} allowance must be made for differences in the irksomeness of the final labor, whether we are comparing individuals or communities; and for communities we must remember that the value of a dollar is merely an average of its value to the individuals.

Much has been said in derision of the labor standard but, after all, about the only way we have of judging the importance which different people set upon anything is the amount of labor which, in a condition of freedom, they are willing to give for it.

(1) It is the irksomeness of the final labor rather than that of the whole day that must be taken into account. The sluggish negro basking in a southern climate, values the dollar less than the energetic artizan, though labor on the whole is more irksome to him. The artizan, however, continues work till its final disutility to him is greater.

If the general rate of money earnings is increasing and the sacrifice involved in the final labor is not also increasing, we may be sure that the value of a dollar is falling; but if the preceding arguments are correct it need not follow that the dollar is an unfair standard of deferred payments. If the advantage of social progress should go to the debtor rather than to the creditor, a monetary unit of constant purchasing power may be better than one of constant subjective value. It seems quite possible that a carefully arranged multiple standard, made up of the principle articles of every day consumption and expenditure would yield the best available standard of deferred payments.

It will be observed that the subjective standpoint has been carefully maintained throughout the preceding discussion. The article has chiefly considered the nature and measurement of the value of the monetary unit. By a well founded habit we express all values in our ordinary economic life in terms of the monetary unit. The explanation of the way in which these different money values come to be assigned to different commodities belongs to the theory of

prices, and will not be considered here. But before we can know the significance of a price or a value as ordinarily expressed, we must know the value of the monetary unit. All other values are expressed in dollars and cents. If we can find the value of a dollar by referring to its subjective importance, we have the key to the whole system.

We find the subjective importance of a dollar varies with one's economic condition, and to each individual, is determined by the final utility of his money to him, or what amounts to the same thing - by the disutility of earning money at the point of time when that disutility is just offset by the utility of the earnings.

We find that the wants of the different members of society are not satisfied in the order of their urgency, and, therefore, properly speaking, there can be no such
thing as a final degree of utility to society as a whole.⁽¹⁾

(1) As we have seen, a commodity always goes to the one who will pay most for it. So the price of anything does not depend upon what would be its final subjective utility to society, but upon its final purchasing power; that is, upon the smallest offers that can be satisfied with the available supply.

It appears, therefore, that the value of the dollar to society can be but an average of its value to the individuals who compose the society.

If the average value of a dollar is to remain constant the average of its final utility to the different members of society must remain constant, or, what amounts to the same thing, the average disutility of earning a cent at the point of time when that disutility is just balanced by the utility of the cent must remain constant.

However, there is reason to doubt whether a unit of such constant average subjective value would be the best standard of deferred payments.

On account of our inability to accurately measure the subjective feelings of other people we must rely upon a careful use of the labor standard for comparing the subjective value of the monetary unit to different individuals and to different generations.

As the standard of deferred payments a unit of constant purchasing power may be recommended, rather than one of constant average value.

David I. Green was born at Ithaca, New York, February 5, 1864. After his eighth year his home was at Alfred Center, N.Y., where he had the advantages of preparatory and college training in Alfred University. From the University he received the following degrees in course:

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Bachelor of Arts, " " 1885,

Master of Arts " " 1886

Bachelor of Science, " " 1890.

On leaving college in 1886, he taught English and Scientific branches for one year in West Nottingham Academy, Maryland, and Natural Science and Latin for one year in Glenwood Collegiate Institute, New Jersey. During the following two years he served as Acting Professor of the Latin Language and Literature in Alfred University. In 1890, he resigned that work in order to pursue further studies, and has since been in residence at Johns Hopkins University.

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